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Date of Deposit: July 23, 1999
Attorney's Docket No: C1041/7005

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Wagner, et al.
Serial No: Unassigned
Filed: 23 July 99 (23.07.99)
For: PHARMACEUTICAL COMPOSITIONS COMPRISING A
POLYNUCLEOTIDE AND OPTIONALLY AN ANTIGEN FOR
VACCINATION

BOX: PCT
The Assistant Commissioner
for Patents
Washington, D.C. 20231

**STATEMENT FILED PURSUANT TO THE DUTY OF
DISCLOSURE UNDER 37 CFR §§1.56, 1.97 AND 1.98**

Sir:

Pursuant to the duty of disclosure under 37 C.F.R. §§1.56, 1.97 and 1.98, the Applicant requests consideration of this Information Disclosure Statement.

Compliance with 37 C.F.R. §1.97

This Information Disclosure Statement has been filed before the mailing date of a first Office Action on the merits in the above-identified case. No fee or certification is required.

Information Cited

The Applicant hereby makes of record in the above-identified application the information listed on the attached form PTO-1449 (modified). The order of presentation of the references should not be construed as an indication of the importance of the references.

Remarks

A copy of each of the above-identified information is enclosed unless otherwise indicated on the attached form PTO-1449 (modified). It is respectfully requested that:

1. The Examiner consider completely the cited information, along with any other

information, in reaching a determination concerning the patentability of the present claims;

2. The enclosed form PTO-1449 be signed by the Examiner to evidence that the cited information has been fully considered by the Patent and Trademark Office during the examination of this application;

3. The citations for the information be printed on any patent which issues from this application.

By submitting this Information Disclosure Statement, the Applicant makes no representation that the information cited in the Statement is, or is considered to be, material to patentability as defined in 37 C.F.R. §1.56(b).


By submitting this Information Disclosure Statement, the Applicant makes no representation that the information cited in the Statement is, or is considered to be, in fact, prior art as defined by 35 U.S.C. §102.

By submitting this Information Disclosure Statement, the Applicant makes no representation that a search has been performed, of the extent of any search performed, or that more relevant information does not exist.

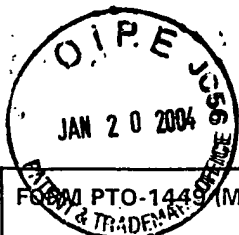
Notwithstanding any statements by the Applicant, the Examiner is urged to form his own conclusion regarding the relevance of the cited information.

An early and favorable action is hereby requested.

Respectfully submitted,

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Docket No. **C1041/7005 HCL**
Dated: July 23, 1999
NDD



FORM PTO-144 (Modified) 'LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT	ATTY. DOCKET NO. C1041/7005	SERIAL NO.
	APPLICANT: Lipford, et al.	
	FILING DATE July 23, 1999	GROUP

U.S. PATENT DOCUMENTS

Exam Init	Ref Des	Document No.	Date	Name	Class	Sub Class	FILING DATE If Appropriate
	A1	3.906.092	09/16/19	Hilleman et al.	424	89	
	A2	5.248.670	09/28/93	Draper et al.	514	44	
	A3	5.585.479	12/17/96	Hoke et al.	536	24.5	
	A4	5.328.987	07/12/94	Maliszewski	530	350	
	A5	5.663.153	09/02/97	Hutcherson et al.	514	44	
	A6	5.849.719	12/15/98	Carson et al.	514	44	10/04/96

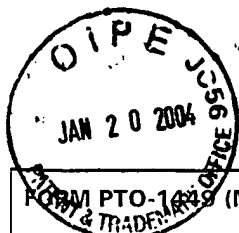
FOREIGN PATENT DOCUMENTS

		Country & Doc. No. (11)	Pub. Date (43)		Class	Sub Class	Translation Yes No	
	B1	EP 0 468 520 A3	01/29/92	EPO	A61K	31/70		
	B2	EP 0 302 758 A1	03/16/94	EPO	C12N	15/37		
	B3	WO 91/12811	09/05/91	PCT	A61K	31/70		
	B4	WO 92/03456	03/05/92	PCT	C07H	15/12		
	B5	WO 92/18522	10/29/92	PCT	C07H	21/00		
	B6	WO 92/21353	12/10/92	PCT	A61K	31/70		
	B7	WO 94/19945	09/15/94	PCT	A01N	43/04		
	B8	WO 95/05853	03/02/95	PCT	A61K	48/00		
	B9	WO 95/26204	10/05/95	PCT	A61K	48/00		
	B10	WO 96/02555	02/01/96	PCT	C07H	21/00		
	B11	WO 96/35782	11/14/96	PCT	C12N	15/11		
	B12	WO 98/14210	04/09/98	PCT	A61K	39/35		
	B13	WO 98/18810	05/07/98	PCT	C07H	21/00		
	B14	WO 98/37919	09/03/98	PCT	A61K	49/00		
	B15	WO 98/40100	09/17/98	PCT	A61K	39/39		
	B16	WO 98/52581	11/26/98	PCT	A61K	35/00		
	B17	PCT/EP98/00367	08/07/98	International Search Report				

OTHER ART

(Including Author, Title, Date, Pertinent Pages, Publication, Etc.)

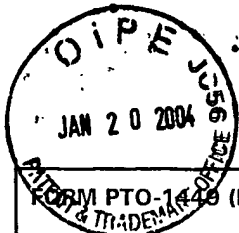
C1	Adya N et al., Expansion of CREB's DNA recognition specificity by Tax results from interaction with Ala-Ala-Arg at positions 282-284 near the conserved DNA-binding domain of CREB. <i>Proc Natl Acad Sci USA</i> 91(12):5642-6, 7 Jun 1994.
C2	Arany Z et al., E1A-associated p300 and CREB-associated CBP belong to a conserved family of coactivators. <i>Cell</i> 77(6):799-800, 17 Jun 1994.
C3	Arias J et al., Activation of cAMP and mitogen responsive genes relies on a common nuclear factor. <i>Nature</i> 370:226-9, 21 Jul 1994.
C4	Asiedu CK et al., Binding of AP-1/CREB proteins and of MDPB to contiguous sites downstream of the human TGF-beta 1 gene. <i>Biochim Biophys Acta</i> 1219(1):55-63, 13 Sep 1994.
C5	Azad RF et al., Antiviral activity of a phosphorothioate oligonucleotide complementary to RNA of the human cytomegalovirus major immediate-early region. <i>Antimicrob Agents Chemother</i> 37(9):1945-54, Sep 1993.



PTO-100 (Modified) LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT			ATTY. DOCKET NO. C1041/7005	SERIAL NO.
			APPLICANT: Lipford, et al.	
			FILING DATE July 22, 1999	GROUP
C6	Azuma I et al., Biochemical and immunological studies on cellular components of tubercle bacilli. <i>Kekkaku</i> 67(9):625-631, 1992.			
C7	Blaxter ML et al., Genes expressed in <i>Brugia malayi</i> infective third stage larvae. <i>Mol Biochem Parasitol</i> 77(1):77-93, Apr 1996.			
C8	Briskin M et al., Lipopolysaccharide-unresponsive mutant pre-B-cell lines blocked in NF-kappa B activation. <i>Mol Cell Biol</i> 10(1):422-5, Jan 1990.			
C9	Crosby SD et al., The early response gene NGFI-C encodes a zinc finger transcriptional activator and is a member of the GCGGGGGCG (GSG) element-binding protein family. <i>Mol Cell Biol</i> 11(8):3835-41, Aug 1991.			
C10	Crystal RG, Transfer of genes to humans: early lessons and obstacles to success. <i>Science</i> 270(5235):404-10, 20 Oct 1995.			
C11	Du W and Maniatis T, An ATF/CREB binding site is required for virus induction of the human interferon beta gene. <i>Proc Natl Acad Sci USA</i> 89(6):2150-4, Mar 1992.			
C12	Du W et al., Mechanisms of transcriptional synergism between distinct virus-inducible enhancer elements. <i>Cell</i> 74(5):887-98, 10 Sep 1993.			
C13	Englisch et al., Chemically modified oligonucleotides as probes and inhibitors. <i>Angew Chem Int Ed Engl</i> 30:613-629, 1991.			
C14	Ferreri K et al., The cAMP-regulated transcription factor CREB interacts with a component of the TFIID complex. <i>Proc Natl Acad Sci USA</i> 91(4):1210-3, Feb 1994.			
C15	Gray GD et al., Antisense DNA inhibition of tumor growth induced by c-Ha-ras oncogene in nude mice. <i>Cancer Res</i> 53(3):577-80, 1 Feb 1993.			
C16	Highfield PE, Sepsis: the more, the murkier. <i>Biotechnology</i> 12(8):828, Aug 1994.			
C17	Himes SR et al., HTLV-1 tax activation of the GM-CSF and G-CSF promoters requires the interaction of NF-kB with other transcription factor families. <i>Oncogene</i> 8(12):3189-97, Dec 1993.			
C18	Huang D et al., Promoter activity of the proliferating-cell nuclear antigen gene is associated with inducible CRE-binding proteins in interleukin 2-stimulated T lymphocytes. <i>Mol Cell Biol</i> 14(6):4233-43, Jun 1994.			
C19	Iguchi-Arigo SM and Schaffner W, CpG methylation of the cAMP-responsive enhancer/promoter sequence TGACGTCA abolishes specific factor binding as well as transcriptional activation. <i>Genes Dev</i> 3(5):612-9, May 1989.			
C20	Kataoka T et al., Antitumor activity of synthetic oligonucleotides with sequences from cDNA encoding proteins of <i>Mycobacterium bovis</i> BCG. <i>Jpn J Cancer Res</i> 83(3):244-7, Mar 1992.			
C21	Kimura Y et al., Binding of oligoguanylate to scavenger receptors is required for oligonucleotides to augment NK cell activity and induce IFN. <i>J Biochem (Tokyo)</i> 116(5):991-4, Nov 1994.			
C22	Kline JN et al., CpG motif oligonucleotides are effective in prevention of eosinophilic inflammation in a murine model of asthma. <i>J Invest Med</i> 44(7):380A, 1996.			
C23	Kline JN et al., Immune redirection by CpG oligonucleotides. Conversion of a Th2 response to a Th1 response in a murine model of asthma. <i>J Invest Med</i> 45(3):282A, 1997.			
C24	Kline JN et al., CpG oligonucleotides can reverse as well as prevent TH2-mediated inflammation in a murine model of asthma. <i>J Invest Med</i> 45(7):298A, 1997.			
C25	Klinman DM et al., CpG motifs present in bacteria DNA rapidly induce lymphocytes to secrete interleukin 6, interleukin 12, and interferon gamma. <i>Proc Natl Acad Sci USA</i> 93(7):2879-83, 2 Apr 1996.			
C26	Krajewski W et al., A monomeric derivative of the cellular transcription factor CREB functions as a constitutive activator. <i>Mol Cell Biol</i> 14(11):7204-10, Nov 1994.			
C27	Krieg AM, An innate immune defense mechanism based on the recognition of CpG motifs in microbial DNA. <i>J Lab Clin Med</i> 128(2):128-33, Aug 1996.			
C28	Krieg AM et al., A role for endogenous retroviral sequences in the regulation of lymphocyte activation. <i>J Immunol</i> 143(8):2448-51, 15 Oct 1989.			



FORM 100 (Modified) LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT		ATTY. DOCKET NO. C1041/7005	SERIAL NO.
		APPLICANT: Lipford, et al.	
		FILING DATE July 22, 1999	GROUP
C29	Krieg AM et al., CpG motifs in bacterial DNA trigger direct B-cell activation. <i>Nature</i> 374:546-9, 6 Apr 1995.		
C30	Krieg AM et al., Oligodeoxynucleotide modifications determine the magnitude of B cell stimulation by CpG motifs. <i>Antisense Nucleic Acid Drug Dev</i> 6(2):133-9, Summer 1996.		
C31	Krieg AM et al., Uptake of oligodeoxyribonucleotides by lymphoid cells is heterogeneous and inducible. <i>Antisense Res Dev</i> 1(2):161-71, Summer 1991.		
C32	Kuramoto E et al., Oligonucleotide sequences required for natural killer cell activation. <i>Jpn J Cancer Res</i> 83(11):1128-31, Nov 1992.		
C33	Kwok RP et al., Nuclear protein CBP is a coactivator for the transcription factor CREB. <i>Nature</i> 370:223-6, 21 Jul 1994.		
C34	Lee KA and Masson N, Transcriptional regulation by CREB and its relatives. <i>Biochim Biophys Acta</i> 1174(3):221-33, 23 Sep 1993.		
C35	Leonard GA et al., Conformation of guanine-8-oxoadenine base pairs in the crystal structure of d(CGCGAATT(08A)GCG). <i>Biochemistry</i> 31(36):8415-20, 15 Sep 1992.		
C36	Liu F and Green MR, Promoter targeting by adenovirus E1a through interaction with different cellular DNA-binding domains. <i>Nature</i> 368:520-5, 7 Apr 1994.		
C37	McIntyre KW et al., A sense phosphorothioate oligonucleotide directed to the initiation codon of transcription factor NF-kappa B p65 causes sequence-specific immune stimulation. <i>Antisense Res Dev</i> 3(4):309-22, Winter 1993.		
C38	Messina JP et al., The influence of DNA structure on the in vitro stimulation of murine lymphocytes by natural and synthetic polynucleotide antigens. <i>Cell Immunol</i> 147(1):148-57, Mar 1993.		
C39	Messina JP et al., Stimulation of in vitro murine lymphocyte proliferation by bacterial DNA. <i>J Immunol</i> 147(6):1759-64, 15 Sep 1991.		
C40	Mottram JC et al., A novel CDC2-related protein kinase from <i>Leishmania mexicana</i> , LmmCRK1, is post-translationally regulated during the life cycle. <i>J Biol Chem</i> 268(28):21044-52, 5 Oct 1993.		
C41	Nyce JW and Metzger WJ, DNA antisense therapy for asthma in an animal model. <i>Nature</i> 385(6618):721-5, 20 Feb 1997.		
C42	Peterson, M., et al., Transcription Factors: A New Frontier in Pharmaceutical Development, <i>Bio Pharm</i> , 47:1:127-128		
C43	Pisetsky DS and Reich CF, Stimulation of murine lymphocyte proliferation by a phosphorothioate oligonucleotide with antisense activity for herpes simplex virus. <i>Life Sci</i> 54(2):101-7, 1994.		
C44	Rojanasakul Y, Antisense oligonucleotide therapeutics: drug delivery and targeting. <i>Adv Drug Delivery Rev</i> 18:115-131, 1996.		
C45	Roman M et al., Immunostimulatory DNA sequences function as T helper-1-promoting adjuvants. <i>Nat Med</i> 3(8):849-54, Aug 1997.		
C46	Sato Y et al., Immunostimulatory DNA sequences necessary for effective intradermal gene immunization. <i>Science</i> 273(5273):352-4, 19 Jul 1996.		
C47	Schnell N and Entian KD, Identification and characterization of a <i>Saccharomyces cerevisiae</i> gene (PAR1) conferring resistance to iron chelators. <i>Eur J Biochem</i> 200(2):487-93, 1 Sep 1991.		
C48	Stein CA and Cohen JS, Oligodeoxynucleotides as inhibitors of gene expression: a review. <i>Cancer Res</i> 48(10):2659-68, 15 May 1988.		
C49	Stull RA and Szoka FC Jr, Antigene, ribozyme and aptamer nucleic acid drugs: progress and prospects. <i>Pharm Res</i> 12(4):465-83, Apr 1995.		
C50	Tanaka T et al., An antisense oligonucleotide complementary to a sequence in I gamma 2b increases gamma 2b germline transcripts, stimulates B cell DNA synthesis, and inhibits immunoglobulin secretion. <i>J Exp Med</i> 175(2):597-607, Feb 1992.		



FORM PTO-1428 (Modified) LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT		ATTY. DOCKET NO. C1041/7005	SERIAL NO.
		APPLICANT: Lipford, et al.	
		FILING DATE July 22, 1999	GROUP
C51	Tokunaga T et al., Synthetic oligonucleotides with particular base sequences from the cDNA encoding proteins of <i>Mycobacterium bovis</i> BCG induce interferons and activate natural killer cells. <i>Microbiol Immunol</i> 36(1):55-66, 1992.		
C52	Tokunaga T et al., A synthetic single-stranded DNA, poly(dG,dC), induces interferon-alpha/beta and -gamma, augments natural killer activity, and suppresses tumor growth. <i>Jpn J Cancer Res</i> 79(6):682-6, Jun 1988.		
C53	Uhlmann E and Peyman A, Antisense oligonucleotides: a new therapeutic principle. <i>Chem Rev</i> 90(4):543-84, Jun 1990.		
C54	Wagner RW, Gene inhibition using antisense oligodeoxynucleotides. <i>Nature</i> 372(6504):333-5, 24 Nov 1994.		
C55	Wallace RB and Miyada CG, Oligonucleotide probes for the screening of recombinant DNA libraries. <i>Methods Enzymol</i> 152:432-442, 1987.		
C56	Weiss R, Upping the antisense ante: scientists bet on profits from reverse genetics. <i>Science News</i> 139:108-109, 16 Feb 1991.		
C57	Whalen RG, DNA vaccines for emerging infectious diseases: what if? <i>Emerg Infect Dis</i> 2(3):168-75, 1996.		
C58	Wu-Pong S, Oligonucleotides: opportunities for drug therapy and research. <i>Pharm Technol</i> 18:102-114, Oct 1994.		
C59	Xie H et al., Induction of CREB activity via the surface Ig receptor of B cells. <i>J Immunol</i> 151(2):880-9, 15 Jul 1993.		
C60	Yamamoto S, Mode of action of oligonucleotide fraction extracted from <i>Mycobacterium bovis</i> BCG. <i>Kekkaku</i> 69(9):571-4, Sep 1994.		
C61	Yamamoto S et al., DNA from bacteria, but not from vertebrates, induces interferons, activates natural killer cells and inhibits tumor growth. <i>Microbiol Immunol</i> 36(9):983-97, 1992.		
C62	Yamamoto S et al., Unique palindromic sequences in synthetic oligonucleotides are required to induce IFN and augment IFN-mediated natural killer activity. <i>J Immunol</i> 148(12):4072-6, 1992.		
C63	Yamamoto T et al., Ability of oligonucleotides with certain palindromes to induce interferon production and augment natural killer cell activity is associated with their base length. <i>Antisense Res Dev</i> 4(2):119-22, Summer 1994.		
C64	Yamamoto T et al., Lipofection of synthetic oligodeoxyribonucleotide having a palindromic sequence of AACGTT to murine splenocytes enhances interferon production and natural killer activity. <i>Microbiol Immunol</i> 38(10):831-6, 1994.		
C65	Yamamoto T et al., Synthetic oligonucleotides with certain palindromes stimulate interferon production of human peripheral blood lymphocytes in vitro. <i>Jpn J Cancer Res</i> 85(8):775-9, Aug 1994.		
C66	Yi AK et al., Rapid immune activation by CpG motifs in bacterial DNA. Systemic induction of IL-6 transcription through an antioxidant-sensitive pathway. <i>J Immunol</i> 157(12):5394-402, 15 Dec 1996.		
C67	Zhao Q et al., Comparison of cellular binding and uptake of antisense phosphodiester, phosphorothioate, and mixed phosphorothioate and methylphosphonate oligonucleotides. <i>Antisense Res Dev</i> 3(1):53-66, Spring 1993.		
C68	Zhao Q et al., Stage-specific oligonucleotide uptake in murine bone marrow B-cell precursors. <i>Blood</i> 84(11):3660-6, 1 Dec 1994.		
C69	New England Biolabs Catalog, 1988-1989, item #1230.		
Examiner		Date Considered	

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.